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ABSTRACT

This collection of environmental education newsletters includes two issues published in 1979. The first issue discusses the African Regional Workshop in Environmental Education, held in Senegal in December 1978. Also included are: (1) a discussion of environmental education in the USSR; (2) a discussion of the state of the environment, 1978; and (3) announcements of environmental education news and publications. The second issue discusses at length the various national training activities in environmental education. Specific nations are treated. Also discussed is the role of science education and the environment. Environmental education publications and news entries are presented. (RE)

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

Vol. IV, No. 1. March 1979

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African Regional Workshop in Environmental Education

The first of a series of regional workshops in environmental education for key personnel – teacher educators, curriculum developers, supervisors, educational planners and administrators – was held in Dakar, Senegal, 11-20 December 1978. Three other regional workshops are planned for 1979: in Asia, the Arab States and Latin America. The series of regional workshops is a direct follow-up to recommendations of the Intergovernmental Conference on Environmental Education, convened in Tbilisi (USSR), October 1977, and constitutes one of the principal areas of activity of the Unesco-UNEP International Programme for Environmental Education.

Participating in the 10-day workshop at Dakar were key education personnel from these countries: Benin, Cameroon, Cape Verde, Central African Empire, Comores, Djibouti, Gabon, Guinea Bissau, Kenya, Mauritania, Mauritius, Niger, Senegal, Sierra Leone, Tchad, Togo, Uganda, Upper Volta, Zambia and Zaire. Observers from the United Nations Environment Programme (UNEP) and the Environmental Training Programme (ENDA) joined the participants.

As planned for all the regional worshops in environmental education, discussions and working groups revolved around the development of **strategies** for:

1. establishing environmental education programmes at the national level;
2. curriculum development and the preparation of teaching/learning materials for primary and secondary schools and teacher-education institutions;
3. training of teachers in environmental education for primary and secondary schools and teacher-education institutions.

Participants had previously prepared reports on their respective country's innovative efforts in environmental education at the national level, particularly with reference to the three items of the workshop agenda. The reports were presented and served as the basis for a preliminary general discussion which set the stage for the concrete work of the three working groups organized around the main themes of the agenda.

It was noted in the general discussion that most people in Africa had regarded environmental problems as something of concern only to developed, industrialized countries. Pollution, for instance, was associated almost exclusively with industrial pollution. This attitude, however, has since changed as people observed environmental deterioration in the wake of a development process that did not sufficiently take into account the ecological balance. In turn this led to a perceived need for a constantly increasing knowledge and understanding of the environment in its totality – natural and built, rural and urban, cultural, economic, technological and esthetic – that is, the need for general and special environmental education.

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Considering it an integral part of the educational process, participants pointed out that environmental education should not be just one more subject or discipline added to existing curricula, but rather a dimension to be incorporated in educational programmes for all learners at all ages and levels. A new joint pattern of work must be drawn up, it was agreed, that involved home, community and school so as to initiate young people especially in environmental issues. Environmental education in general should serve as a common denominator in the reform and renewal of contemporary education, both in-school and out. Here clear, functional relationships must be established and maintained among needs, goals, objectives, the curriculum proper and methods for an ongoing evaluation of the entire process. The central goal is to develop a population that is aware of, and concerned about, the environment and its problems, and that has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solution of current problems and prevention of new ones.

Planning and Management of Environmental Education at the National Level

Many countries in the African region, according to workshop participants, recognize that there can be no hope of viable solutions to environmental problems unless and until education at all levels is suitably modified so as to enable people from all walks of life to comprehend, from childhood, the fundamental interactions and interrelationships between themselves and their environment. To facilitate this, planning, implementation and management of environmental education at the national level must be developed.

Despite the problems encountered in understanding the concept of environmental education (EE) and the lack of resources to develop appropriate programmes, a number of countries have made some advances in developing and implementing EE programmes on a national scale. At the primary education level, topics of relevance to the immediate environment have been introduced. At the university level, efforts have been made to introduce environmental concerns by means of interdisciplinary courses. These concerns are dealt with to a lesser extent in various subjects at the secondary level, such as in social or natural science studies.

Programmes centered on the environment for out-of-school youth and young adults as well as the general public have been developed, often accompanied by the establishment of new institutional arrangements, such as national environmental institutes and councils, youth camps and youth centres, tree-planting programmes, curriculum development centres, etc. Special faculties for environmental studies have been established in several national universities in addition to regular EE courses in departments of engineering, architecture, design, town planning, agriculture and education. EE programmes are generally conducted by ministries of education in co-operation with other ministries concerned with environmental problems, such as ministries of health, agriculture, land and mines, community development and, where it applies, ministries with a specific responsibility for the environment.

Effective implementation of environmental education has called for the development of appropriate pre-service and in-service teacher training, assessment of related concepts and programmes, available research, experiences, models and materials, and the use of the local environment as a learning resource.

Curriculum Development and Preparation of Materials

Accent was placed by participants at the African workshop on the study of problems familiar to the learners in their own home, community and country, which meant learning from the environment as well as about the environment. In many situations this has required changes in some well-established approaches to teaching, especially in formal education. Adoption of the interdisciplinary, problem-solving approach of environmental education has played a considerable role in the renovation of educational systems in general.

To be effective, it was felt, the content, methods and materials of environmental education must be adapted to the needs of the learner. Distinctions, too, must be made in the various roles of environmental education: (1) in the development of a curriculum for increased awareness and understanding of environmental problems among the general public (children, youth and adults); (2) in preparing certain occupational groups, such as engineers, planners, architects, medical personnel, teachers, administrators and industrial managers, whose work and responsibilities bear directly or indirectly on the environment; and (3) in training specialists for environmental research or other professional activities involving the environmental sciences.

Participants stressed the role of constant, continuous evaluation of the needs of both society and the student, the development of EE programmes in relation to real problems, urgent issues and priorities: sanitation, housing, deforestation, erosion, diseases, etc. Teaching/learning materials must be tested and evaluated before they are widely distributed. High adaptability to local conditions should be a basic requirement.

Successful implementation of curriculum development and preparation of materials was deemed dependent on coordination among the bodies most concerned and on adequate teacher training for all educational levels – pre-primary, primary, secondary, and teacher-training institutions themselves.

Strategies for in-service teacher training, elaborated at the workshop, involve: (1) training teachers of all subjects at the primary and secondary level in the incorporation of the environmental dimension in their respective subjects; (2) basing the in-service training programmes on the contents of the school curriculum; (3) budgeting for in-service EE training on a regular yearly basis; (4) preferably starting at all educational levels, but at least in primary schools, where teachers and students have the most direct contact with surrounding society and the local environment and possibly the greatest impact on the development and implementation of environmental education; (5) establishment of a central committee consisting of experienced and knowledgeable persons from the Ministry of Education, universities, teacher-education institutions, etc., for planning and implementing in-service EE training programmes; (6) integration of these programmes with other in-service teacher-training programmes; and (7) use of such mechanisms as on-the-job training of teachers by roving supervisors, vacation-time seminars and workshops, study leaves, correspondence courses and closed-circuit television courses.

The Workshop's Working Papers

Working papers were prepared for each of the three items of the workshop agenda and provided to participants as a basis for their discussions: *On developing a national strategy for environmental education; Curriculum development and preparation of teaching/learning materials for primary and secondary schools ; and Teacher training in environmental education for primary and secondary schools and teacher-training institutions.*

The first-mentioned paper contains a useful summary, titled "Suggested Example of a Process for Developing a National Environmental Education Strategy," which might be of general interest. It follows:

Phase I – Start-up Activities for Developing a National Strategy for Environmental Activities

1. Formation of the initial planning committee, convened by the Minister of Education or other appropriate authority and composed of leading representatives of a wide variety of EE interests and expertise.
2. Assessment of national experiences and available resources in environmental education.
3. Assessment of environmental education needs and priorities.
4. Establishing a national environmental education planning committee.

Phases II and III – Planning and Management Activities for a National Environmental Education Strategy

1. National committee through staff work to prepare for and conduct a national conference to decide on plans.
2. Short range planning and implementation: (a) adoption of environmental education goals and objectives; (b) identification of target groups; (c) identification of guiding principles; (d) implementation plan.
3. Long range planning and implementation: (a) establishment of instructional programmes; (b) evaluation of instructional programmes; (c) establishment of research programmes; (d) establishment of institutional arrangements; (e) establishment of communication programmes; (f) development of financial resources; (g) implementation plan.
4. Government and nongovernment organizations assigned management responsibilities for implementing the plan.

Phase IV – Evaluation and Revision Activities of the National Environmental Education Strategy

1. National planning committee in cooperation with management organizations to prepare for evaluation and assign responsibilities.
2. Evaluation of outcomes of planning and management process.
3. Revision of national strategy for environmental education based upon evaluation.

The second working paper – on curriculum development and the preparation of teaching/learning EE materials for primary and secondary schools – similarly presents useful summaries:

Major curriculum development tasks

1. Planning – selection of objectives; selection of content; selection of teaching/learning strategies.
2. Preparation of instructional materials – creation of materials; organization of materials into a course of study; try out of materials; modification of materials on basis of the try-out.
3. Implementation – dissemination; establishing a teacher-training logistics system; adjusting national examination co-systems; cooperation with appropriate administrative bodies ; quality control; revision of curriculum programme.

Criteria for the development of EE materials

1. Materials should be multimedia (printed, audiovisual, etc.) and include teacher's guides, self-learning student materials, posters, charts, etc.
2. They should stress various teaching and learning processes and techniques.
3. Costs should be kept as low as possible.
4. Materials should be developed by multidisciplinary teams.
5. They should be structured in such a manner as to be easily adapted or modified by teachers and students.
6. Provision should be made to modernize or update them every three to five years.
7. Supportive or background teacher's manuals should be prepared covering general and specific aspects of environmental education.

The third working paper – on teacher training for environmental education – lists the following as the pertinent goals and objectives:

At the primary level

1. To learn the content and concepts of environmental education.
2. To examine available programmes and materials in environmental education.
3. To learn methods in education that are particularly appropriate for environmental education.
4. To develop a structure around which a teacher can develop his or her environmental education programme.
5. To develop methods for incorporating environmental education in a variety of subject areas.
6. To look for aspects of environmental issues which can be linked with environmental education.
7. To develop readiness in teachers to look at environmental education in the light of the needs of the community or country.
8. To develop programmes which ensure an effective understanding of environmental education on the part of student teachers.

At the secondary level

1. To develop the attitudes and skills enabling the student to participate in decision-making processes.
2. To understand the impact of science and technology on society.
3. To understand the role of environment in the development of humanity from a world perspective, while paying due regard to regional and national differences.
4. To develop the ability to draw information from a variety of sources.
5. To help the teacher to realize his or her role as a facilitator of the learning process inside and outside the classroom.
6. To give a broad and integrated background in environmental education on the natural and man-made environment, ecology, human settlements, pollution, rational use of soil and water, management of natural resources, population, etc.
7. To develop an understanding of the learning process as well as sensitivity to the needs of students and the flexibility to adapt and modify programmes to meet their needs.
8. To develop skills for utilizing the diverse learning environments in the community and to train teachers in ways of using local resources effectively.
9. To find ways to broaden the present single discipline-oriented courses and programmes so that cross relationships become clear and evident.

Conclusions

1. Teacher-training programmes should instill in teachers the kind of sensitivity towards environmental education that they will be expected to give to their students, for only teachers who are themselves concerned about their environment can successfully develop similar behaviour in students.

2. Teacher-training programmes should involve real situations as much as possible, by using the great variety of areas in the school environment, e.g., outdoor parks, recreation areas, urban centres, etc.

3. Teacher-training programmes should place a strong emphasis on the different kinds of materials that are available or are likely to be available for classroom use and develop expertise in how best to locate, select, adapt and use them effectively.

4. There is need for adequate training of teachers for environmental education, accompagnied by an awareness of the need to apply their personal commitment and special training outside the classroom in the community and the world at large.

Arab States of the Gulf

A regional workshop similar to that held in Dakar, Senegal, is planned for the Arab States in September or October 1979. Partly as preparation for that workshop Unesco's regional consultant in environmental education toured Arab States of the Gulf – Bahrein, Kuwait, Qatar and the United Arab Emirates – and reported on the general environmental education situation.

The Gulf States are a subregion with common environmental problems stemming largely from a rapid expansion in the exploitation of petrol resources. Oil spills, air pollution from oil refineries, salination and lowering of water tables are among these problems. Individually and collectively the countries concerned are placing increasing emphasis on environmental education and training as a major step towards a more harmonious balance between development and the natural environment.

Projects are in preparation or underway for seminars at the national level in each State with the aim of establishing the goals, objectives and characteristics of environmental education in terms of the specific problems of the Gulf area; and of developing an action plan with emphasis on the production of modular instructional materials.

EE Activities in the USSR

The 25th anniversary of the entrance of the Soviet Union, the Byelorussian SSR and the Ukrainian SSR into Unesco, combined with the continuing follow-up to the Tbilisi (USSR) Intergovernmental Conference on Environmental Education of 1977, has provided Soviet authorities with the occasion to sum up the nation's EE activities at the present time.

In the framework of the Unesco-UNEP International Programme, Soviet specialists are currently preparing the first version of a multilingual glossary of environmental education terms. A Unesco pilot project being conducted in the Ukrainian SSR, titled "A Methodological Interdisciplinary Study of the Integration of School and Society in the Field of Environmental Education," is coming to a completion, after which a report will be published and disseminated. A country wide EE conference has been confirmed for the summer of 1979 in Minsk, Byelorussia. Results of in-school and out-of-school educational activities concerning environmental protection and improvement will then be reviewed in the light of the Tbilisi Conference discussions and recommendations.

At the pre-primary school level, education in nature care is provided for by a special section of the nursery school programme, which involves 11.5 million children and all pre-school educational institutions. Both knowledge of and care for nature are taught at this time. **At the general primary and secondary level** (normally one school), four EE components can be identified: (1) systematic inculcation of knowledge about nature, society, the rational use of natural resources and the harmonization of nature-society interrelationships; (2) development of practical skills with regard to the protection of nature; (3) direct activities, such as tree planting, fish stocking, etc.; and (4) development of socially sound attitudes and behaviour with regard to the environment.

Compulsory education in the USSR, it should be pointed out, normally means ten to eleven years of formal schooling. Thus virtually the entire population of the nation is exposed to environmental education during the most impressionable years. In turn, teachers by necessity (such is the character of environmental education) have developed a pragmatic inter-subject, i.e., interdisciplinary, approach in the environmental schooling of their students. The contribution of each discipline is sought for and employed. They are aided by a many-sided public information policy regarding environmental concerns which involves popularized scientific literature and periodicals, radio and television programmes, and the like. A problem-solving methodology has been adopted in the schools which successfully integrates knowledge and skills and provides for experiences in the decision-making process. In the final stage of general secondary education, students undergo a special integrated course called "Man and the Biosphere."

A good deal of outside-the-classroom, or extramural, EE activities are conducted, generally organized by school teachers or pedagogically trained personnel of non-school institutions, such as youth nature stations and camps. Many nature protection societies are initiated inside the school system. Activities involve nature patrols, school forestries, erosion control units, field excursions, and the like.

In 1973 the State Committee of the USSR Council of Ministers, concerned with **technical and vocational schooling,** issued a set of recommendations on the environmental protection education of students in this sector of the school system. The approach is interdisciplinary, subjects cover all aspects, including the social and economic aspects, of the environment, emphasizing the impact of society on nature and the biosphere. In technical schools environmental

problems and protection as well as the proper use of resources are part of the programme. Specialists, such as economists, are instructed in their particular aspect of soil and vegetation protection, urbanism, water quality control, etc. All students participate in nature conservation groups. In some technical schools students are specifically qualified for the field of environmental protection.

Environmental specialists themselves are trained at the **higher education level** on both a pre-service and on-the-job basis. They are given intensive instruction in ecological technology, natural resource utilization, biogeocoenology, ecosystems and biosphere, legal and economic aspects of environmental protection, etc. More than twenty training materials have been developed and published over the past decade. It is at this level, too, that research and teacher-training are emphasized, especially of geography and biology student teachers. More than 120 pedagogical institutes have been involved and their experiences assessed and evaluated for the improvement of environmental education in general and the training of environmental specialists in particular.

Important consideration is given to improving qualification in the field of preserving the natural environment on the part of educational personnel as well as professionals in various branches of the national economy. School teachers are systematically trained to participate effectively in this environmental education effort at advanced teacher-training institutes in each republic.

Activities by social organizations and the mass media are directed in each republic towards the environmental indoctrination of the population, since education of every individual is considered an important part of the overall effort in the solution and prevention of environmental problems. Environmental societies number approximately 60,000,000 members and have their centres in schools, industries, kolkhozes, sovkhozes and other collectivities throughout the nation. There are about 1500 people's environmental universities in the USSR financed by environmental organizations. Here engineers, industrial technicians, agriculturalists, teachers, builders, cultural workers and others receive education and instruction in environmental concerns. Lecture teams composed of scientists, environmental specialists, teachers, writers and journalists extend environmental education country-wide. There are 2500 such teams in the All-Russian Environmental Society alone; in 1977 they delivered over 500,000 lectures to various citizen groups. Cinema-lectures have become similarly popular; more than 2,000 cinema-lecture bureaus have been established in the Russian SFSR and 670 in the Ukrainian SSR.

The society known as *Knowledge* has elaborated a considerable number of lecture subjects, lecture cycles, workshop and people's universities programmes on issues related to the environment. It has developed and replicated lecture kits, slide talks and a series of visual aids for wide use. Radio and television are playing an increasingly important role in the environmental education of the public. For many years the national magazine *Native Nature* has been broadcasting a regularly scheduled programme; the central television network of the Soviet Union has been showing a popular monthly series called "Man and Nature." Equally popular are the series of weekly broadcasts on the animal world and films of the Travels with a Movie Camera Club.

State of the Environment 1978

The following is reprinted from UNEP's newsletter Uniterra, *May/June 1978:*

The State of the Environment report for 1978, presented to UNEP's Governing Council by the Executive Director, focussed on malaria, chemicals and the environment, the use of agricultural and agro-industrial residues for increasing the base of food production and the conservation of energy.

According to the report there has been a resurgence of malaria, with 3,000 children killed every day and one quarter of all adults in Africa suffering from its effects at one time or another. In India alone the number of malaria cases rose dramatically from a low of 40,000 cases in 1966 to six million by 1976.

Although a vast amount of scientific information is available on the short-term effects of well-known chemicals, it is still not known what happens if persons are exposed to low doses of certain chemicals for a period of 20 to 30 years. The report calls for the development of non toxic alternatives for a number of clearly dangerous chemicals. UNEP's International Register for Potentially Toxic Chemicals is joining with other international organizations to monitor the occurrence of hazardous chemicals in the environment.

Residues can be Utilized

The report urges that the vast residues of agriculture and agro-industry be better utilized to serve the needs of some 500 million people who are below the minimum acceptable standard of nutrition.

The uses to which agricultural and agro-industrial residues may be put are many and varied. Rice bran, for example, contains about 15-20 percent oil. It also contains vitamin B, amino acids and other nutrients. The oil can be extracted and used for cooking, and de-oiled bran can be used as an animal feed. Rice straw can be used to make paper, board and animal feeds. Corn (maize) cobs from which the grain has been removed can be processed into lubricating oil, acetic acids and formic acid. The residue can be used as bulk filler for animal feeds and as fuel.

The report reveals that more than one-half of the energy put into daily use – in transport, industry, agriculture, households and other consumer sectors – is wasted due to losses induced by technology and by man. Energy conservation is not seen as « going without, » but as better utilization of what is available.

Much usable energy is currently thrown away. If the optimun level of potential energy were to be extracted from urban refuse, animal wastes, agricultural residues and forest-product wastes; if the millions of tons of scrap metal were to be recycled, standardized returnable bottles substituted for most cans, and all the unnecessary packaging that so clutters up modern life eliminated, enormous energy saving could be achieved. In evaluating some of the resources used in developing countries, such as firewood, cow dung and agricultural wastes, the report stresses the environmental and economic benefits which can come from conservation.

EE Communications

Canada

The following information has been received from Michel Mandague, Secretary General, CIEM, C.P. 91, Sillery, Quebec G1T 2P7, Canada:

A new nongovernmental EE body has been created - the Conseil d'Education mésologique des Pays de Langue française (Council for the Environmental Education of French-speaking Countries).

The Council (CIEM) is open to individuals, institutions and organizations of all nations involved in the promotion of environmental education, improvement of the environment and the general cause of ecodevelopment in those countries whose language is French. Founding members come from Belgium, Benin, Burundi, Canada, the Ivory Coast, the Netherlands and Switzerland. The first issue of CIEM's bulletin *Correspondance* has just appeared. The first general assembly of the new organization is envisaged on the occasion of the International Conference on the Environment, scheduled September 1979, Arlon, Belgium (see below).

* * *

The fifth symposium of the Quebec Environmental Council (Conseil Québécois de l'Environnement) was organized jointly with the University of Sherbrooke and held on the latter's campus in Sherbrooke, **Quebec**, 3-4 November 1978. The theme was conceived as a follow-up to the Tbilisi Conference: "Environmental Education, a Tool for Development." One hundred and eighty participants divided into thirteen working groups to discuss EE aspects in both formal and nonformal education from the pre-primary to the post-graduate level, as well as in connection with adult education, leisure and the work place, mass media and responsible decision-makers.

Belgium

An International Conference on the Environment will be held around the theme "Methods and Strategies for Integrated Develoment" in Arlon, **Belgium,** 23-29 September 1979. It is being organized by the Fondation Universitaire Luxembourgeoise under the auspices of the Belgian National Committee for MAB and with the assistance of Unesco. Topics to be discussed are: (1) integrated development and environment; (2) the interdisciplinary approach; (3) the planning process and strategy for integrated development; (4) aids to the decision-making process and systems analysis applied to this process; (5) critical analysis of examples of integrated development and examination of their constraints, obstacles and limitations; and (6) environmental education and training of decision-makers, specialists and technicians.

MAB
Training Activities

On-site training is a normal component of pilot projects supported by Unesco's Man and the Biosphere (MAB) Programme. Interdisciplinary, problem-oriented research is emphasized and methodological bases for ecologically sound development are a constant objective. Herewith follow a number of projects as well as a list of post-graduate training courses.

Tunisia

The extension of the UNEP-MAB Integrated Project on Arid Lands (IPAL) to Tunisia has recently been approved. IPAL is an international project aimed at promoting the rehabilitation and development of arid lands through an integrated programme of research, training and demonstration. Initial field activities within IPAL began in 1976 at Mount Kulal in northern Kenya. Research in the Tunisia Section of IPAL will complement that carried out under two other MAB projects: the Tunisian "Parcours du Sud" project, supported by UNDP, FAO, Unesco and France; and the Tunisia/USA Desert Biome Project. IPAL-Tunisia will as usual be interdisciplinary, including, for example, studies on the socio-economic impediments to the application of techniques of rangeland management developed during the Parcours du Sud project. Knowledge of the population dynamics, habitat and feed requirements of the wildlife of the area, in particular large mammals such as gazelles, will also be sought, so that the possibilities for their rational exploitation under free range conditions can be elucidated.

Venezuela

The International Centre for Tropical Ecology (CIET), created in 1976 as a result of an agreement between Unesco and the government of Venezuela, has organized an international seminar on the structure and functioning of the páramo (waste land). In collaboration with the International Centre for Environmental Training in Spanish-speaking Countries (CIFCA) and MAB, the seminar was held in Mérida, **Venezuela,** from 5 to 12 November 1978, forming part of Venezuela's participation in MAB Project 6 on mountain ecosystems. Themes dealt with at the seminar included: aspects of physical geography, origin and evolution of the biota, comparative phytogeography of the páramos, limnology, human ecology, archaeology and strategies for natural resources management.

* * *

As part of the Unesco-UNEP project on integrated studies of human settlements, the Venezuelan Institute of Scientific Research (IVIC) is carrying out a research and demonstration project focussing on the interrelationship between human health and well-being and the flows of water and extrasomatic energy. A comparison is being made of two cities : Ciudad Guayana, which has undergone rapid growth and industrialization, and Ciudad Boli, where there is only incipient industry and a pattern of slower growth. On the basis of this research, guidelines for ecologically oriented planning and management will be formulated.

Post-graduate training courses

In addition to international and regional training courses, seminars and workshops organized in developing countries, a number of annual international post-graduate training courses in developed countries are sponsored by MAB. These courses are designed to promote the training of specialists from developing countries in the approaches and techniques of integrated survey, environmental research and land evaluation. The following courses take place in European countries:

- Nine-month international post-graduate training course in integrated surveys at the ITC-Unesco Centre for Integrated Surveys, Enschede, **The Netherlands** (organized in cooperation with UNEP).
- Ten-month international post-graduate training course in natural resources research and land evaluation at the University of Sheffield, **United Kingdom** (organized in cooperation with UNEP).
- Eleven-month international post-graduate training course in integrated study and rational use of natural resources at the Universities of Paris, Montpellier and Toulouse, **France** (organized in cooperation with UNEP).
- Seven-month international post-graduate training course in soil science and plant biology at the Universities of Granada and Seville, **Spain.**
- Two-year international post-graduate training course in pedology and soil cartography at the University of Ghent, **Belgium.**
- Six-month international training course on limnology at the University of Vienna, **Austria.**
- Ten-month international post-graduate training course on ecosystem management at the Technical University of Dresden, **German Democratic Republic** (organized in cooperation with UNEP).

EE News and Publications

General

Among the resolutions of the General Assembly of **IUCN** (International Union for Conservation of Nature and Natural Resources) at its 14th Session, Ashkabad, USSR, September-October 1978, was the following, which is of particular interest to environmental educators: "In cooperation with WWF (World Wildlife Fund), Unesco and other organizations concerned, greater support should be given to the development of IUCN activities in the field of conservation education, information and public awareness, paying due regard to the recommendations adopted at the... Conference on Environmental Education held at Tbilisi, USSR, in 1977."

This publication on population education has been received:

Population, Environment and Quality of Life, 142 pp., by Lennart Levi and Lars Andersson, is an overview of existing research on human response to environmental pressure, published by Sweden's Royal Ministry for Foreign Affairs and originally presented to the recent UN World Population Conference. Two of the eight chapters are titled: "Inter-acting variables: the environmental setting" and "The interrelatedness of total man and total environment."

Other publications:

Urban Environmental Indicators, 274 pp., published by the Organisation for Economic Co-operation and Development (**OECD**, 2, rue André-Pascal, 75775 Paris, France), contains an extensive discussion, as well as a set, of urban environmental indicators (housing, services and employment, ambient environment and nuisances, social and cultural) and a number of case studies (London, Stockholm, Zurich, Rouen, Indianapolis, Vienna).

World Wildlife Yearbook 1977-78, 289 pp., published by the World Wildlife Fund (**WWF**, 1110 Morges, Switzerland), describes the worldwide activities and grants (in 1977: $4,829,486 to 417 national and international projects in 85 countries) of this important nongovernmental conservation organization.

EE Switchboard is the environmental education newsletter of the Environment Liaison Centre (P.O. Box 72461, Nairobi, **Kenya**), which has created a communications network for the interchange of EE information among interested nongovernmental organizations, especially in developing countries. The programme has UNEP's support.

Mazingira (means "environment" in Ki-Swahili) is a quarterly in English, French and Spanish which is also supported by UNEP and whose aim is to be "the world forum for environment and development." It can be obtained from the publisher Pergamon Press Limited, Headington Hill Hall, Oxford OX3 OBW, UK. *Environment International*, "a journal of science and technology, health, monitoring and policy," appears bimonthly and is available from the same publisher.

Latin America

Memoria, "primera conferencia regional sobre educación y desarrollo," 359 pp., reports on the first Central American Conference on Education and Development, which brought together Costa Rica, El Salvador, Honduras, Nicaragua and Panama in the host country **Guatemala**, 14-18 November 1977. Participants, proceedings, declarations, recommendations and working documents are fully presented. For information write: Editorial "José de Pineda Ibarra," Ministry of Education, 35 calle final, zona 11, Guatemala.

Ecologia, 179 pp., by Samuel Murgel Branco, is an ecology textbook in Portuguese for secondary education. It is published by Companhia de Tecnologia de Saneamento Ambiental (CETESB, Av. Prof. Frederico Hermann Jr., 345, CEP 05459 – S.P., **Brasil**). The textbook has emerged from a study conducted jointly by CETESB and the Brasilian Education Ministry's Department of Secondary Education. CETESB can furnish on request a catalog of its books, which range in subject matter from sewer systems and water treatment to industrial ventilation.

Recursos Naturais e Renováveis, 47 pp., and *Ecologia*, 49 pp., are pamphlets in the series "Avaliaçao e Perspectivas," published by the Conselho Nacional de Desenvolvimento Cientifico e Tecnologico, Brasilia – D.F., Brasil. Both items are available in Portuguese only. They present an overview of the curren: state of national development in the fields of renewable natural resources and ecology with recommended policies on conservation and environmental education.

Asia and Oceania

Aldinga ("an aboriginal term designating an abundance of fresh water and vegetation... environmental

quality, satisfaction, life and hope") is a magazine published by the Publications Branch, Education Department of Victoria, Australia. For inquiries write: Supervisor, School Forestry Branch, 234 Queensberry Street, Carlton 3053, **Australia.**

The Whipstick Environment Centre is the first field study centre to be established by Victoria's Education Department. Its aim is "to assist teachers with programmes relating to environmental education in order to promote within their students an awareness and appreciation of their natural environment and a better uderstanding of man's place in the ecosystem and his responsibilities within it." For bookings and inquiries write: Peter Pritchard, Officier in Charge, Whipstick Environment Centre, Box 421, Bendigo 3550, Australia. Mr. Pritchard, in a paper titled "What is an Environmental Study Area?", has this to say:

"In order to be selected as an environmental study area, a site should be rich in educational resources that help interpret the environment by illustrating biological or cultural relationships within the environment. Some environmental study areas may be primarily natural, located in areas of natural or scenic significance. They may contain examples of the elements, forces and balances out of which man himself is made and out of which he spins his sites, society and culture. Everything man is or builds is 'nature' before it is anything else. Other environmental study areas may be primarily cultural or man-made – areas in which man has altered the environment to fit his particular needs. In such places, the student can learn to recognize how the environment has affected man's development and how man, in turn, has affected his environment."

Methodological Studies in Environmental Education – 1977, 40 pp., is a collection of articles edited, and some written, by Dr. M. Numata, Professor of Ecology, Faculty of Science, Chiba University, 1-33 Yayoicho, Chiba, 280, **Japan.** It is the work of a project team sponsored by Japan's Ministry of Education which focussed primarily on secondary education.

The Consumers' Association of Penang, 21C, Codrington Avenue, Pulau Pinang, **Malaysia,** has sent a number of brochures, among which are: "Consumer Education, a Comprehension Reader for Malaysian Secondary Schools," 97 pp.; "Crisis in Malaysian Fishing," 22 pp.; "Ideas for Action," 14 pp.; "Battle for the Environment: the Malaysian Experience," folio-size, 90 pp.; "Pollution: Kuala Juru's Battle for Survival," 73 pp.; "Noise Pollution: Kuala Juru's Battle for Survival," 73 pp.; "Noise Pollution: an Awareness Problem in Penang," folio-size, 80 pp.

The Environmental Sanitation Information Center of the Asian Institute of Technology, P.O. Box 2754, Bangkok, **Thailand,** has sent the first issue of its quarterly newsletter *Enfo*, "and with it an open invitation to all concerned with environmental sanitation in developing countries to contribute any news, comments, etc., for publication in future issues."

Editor's Note: The above publications are available in English only.

Europe and North America

Health and the Environment, 161 pp., is No. 8 of the series "Public Health in Europe," published by the Regional Office for Europe, **World Health Organization,** Scherfigsvej 8, 2100 Copenhagen, Denmark. "This issue ... seeks to highlight some environmental health problems of current concern and to describe some of the activities of the WHO Regional Office in this field."

The European Community's Environmental Policy, 32 pp., is published by the Office for Official Publications of the European Communities, 200, rue de la Loi, B-1049 Brussels, Belgium. "An attempt has been made to outline some of the environmental problems facing the European Community, to examine ways in which these are being tackled at Community level, and to indicate how the Community's environmental policy is likely to develop in the coming years."

An Integration of Normative Models for Environmental Education, folio-size, 100 pp., by Raymond Fitz, Joanne Troha and Lorna Wallick, is a report sponsored by the U.S. Office of Environmental Education (OEE). "A normative model describes a system, in this case environmental education, as it should or could be, and not necessarily as it is. The University of Dayton group (Dayton, Ohio) was responsible for combining the various models (commissioned by OEE) and documenting the process and results in this report." Twelve full-page figures illustrate the text. For information write: U.S. Office of Education (Office of Environmental Education), Washington, D.C. 20202, **U.S.A.**

Editor's Note : The above publications are available in English only.

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Connect

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National Training Activities in Environmental Education

Together with the organization of regional workshops, described in the previous issue of *Connect*, initiation and support of training activities at the national level constitute one of the major areas for action of the Unesco-UNEP International Programme for Environmental Education. They form part of the concerted follow-up to recommendations of the Intergovernmental Conference on Environmental Education, convened in Tbilisi (USSR), October 1977.

Specifically the Tbilisi Conference stated that:

"The training of qualified personnel is considered to be a priority activity. This holds good for both initial and in-service training, for the purpose of familiarizing teachers in formal education, organizers in nonformal activities for young people and adults, administrative personnel and educational planners and researchers with environment-linked subject matter and educational and methodological guidelines."

Thus far, support of national training activities in environmental education has been initiated with a number of Member States.

This procedure has been followed: Training activities to be undertaken are identified by Member States according to their perceived needs, whether inside or outside the formal school system. Then a project is drawn up for submission to the Unesco-UNEP Environmental Education Programme, stating goals and objectives, character and number of participants, institutions involved, planned schedule for preparation, implementation and evaluation of the proposed training activity, and details of the finances requested as well as those provided locally.

Qualified personnel for such training activities are considered to include teachers, teacher educators, curriculum developers, educational planners, administrators and supervisors. The aim, as stated at the Tbilisi Conference, is, on the one hand, to acquaint such participants with different aspects and problems of the environment and, on the other, to provide them with a basic training which could enable them to incorporate environmental education (EE) effectively into their respective activities.

Additional aims include acquainting participants with the widest possible range of educational aids, emphasizing low-cost materials and their adaptation to local conditions ; stimulating institutions involved in teacher training to prepare EE training materials suitable for local urban and rural situations in both formal and nonformal education; and the exchange and diffusion of EE training materials and information.

Reports on completed national training activities will appear in Connect ***as they are received***

Republic of Korea

The first national EE training workshop for which a report has been received was held in Seoul, Korea, 11-15 December 1978. It was organized by the Korean National Commission for Unesco following a recommendation to this effect at a previous National Seminar on the Development of Human Environmental Studies. It was also conceived as one of the steps to implement recommendations adopted at the Tbilisi Conference.

Two domestic factors accelerated the need for a national training workshop. One factor has been the new Charter for the Protection of Nature, proclaimed by the government, which has resulted in a country-wide movement aimed at raising general awareness of the environment among the public and impressing it with the importance of active participation in the solution of environmental problems. A second factor is the current governmental effort to revise school curricula during 1979 and 1980, involving a major expansion of education in environmental matters with emphasis on a new interdisciplinary approach.

There was a total of 64 participants at the Korean National EE Training Workshop: 9 from various government agencies, 10 from the Graduate School of Environment, Seoul National University, 25 from 11 provincial Boards of Education and primary and secondary schools, 15 from teacher-training and research institutes, and 5 from the press and broadcasting media.

Programme and discussions were divided into two parts: 1. Analysis of Environmental Problems. 2. Basic Direction of Environmental Education. The first part involved such themes as the natural ecosystem and economic development and efforts on the part of the government and international organizations to improve the environment. The second part dealt directly with environmental education: its goals and contents, methodologies and instructional resources, the present situation in Korean primary and secondary schools and out-of-school EE for the general public. To aid discussion on the last theme, a special report was prepared for the workshop on a survey of environmental perception and attitudes of Korean peoples.

Philippines

Organized by the Science Education Center of the University of the Philippines, a national training workshop on environmental education was held at the University's Center in Quezon City, 26-31 March 1979. The specific theme of the workshop was: Water Resources. There were 26 participants, representing 11 of the 12 Regional Offices of the Ministry of Education and Culture, 10 Regional Science Teaching Centers or Regional Staff Development Centers, and two secondary schools of Metro Manila.

The objectives of the workshop were to provide practical experiences for the teacher-participants which would enable them to: (1) learn concepts and principles of water resource protection, conservation and management as they apply to the Philippine environment; and (2) develop competence in using the immediate environment in teaching these science concepts and principles. Accordingly the six-day workshop was conducted around field and laboratory activities as well as talks and lecture-discussions, which gave participants an opportunity to ask questions clarifying the activities they had just undergone and how best adapt the knowledge acquired to their own local situations.

Stream tables were constructed in the gardens of the Science Education Center to demonstrate stream formation, channel erosion and silt deposition. Similarly the chemistry laboratory provided experience in observation and measurement of such conditions as water pH and hardness, the determination of dissolved oxygen and the biodegradability of locally manufactured detergents. At the campus lagoon, participants learned to record atmospheric and water conditions, to collect freshwater microorganisms using an improvised plankton net made of ordinary wire, local cloth material and a plastic vial, and to identify plankton. There was also a field visit to a nearby water filtration and treatment plant.

Evaluation of the workshop was obtained both quantitatively, in terms of pre-workshop and post-workshop test scores, and qualitatively, in terms of the nominal ratings, comments and suggestions of participants recorded on an evaluation sheet. On the whole the response was positive. As for future plans, the intention is to hold two more such EE workshops by the University of the Philippines' Science Education Center, one stressing soil and the second air.

Workshop on Environmental Education and Training in African Universities

Africa

A workshop on environmental education, training and research in African universities was held in Nairobi, Kenya, from 3 to 9 December 1978. It was convened by the Association of African Universities, hosted by the University of Nairobi and sponsored by the UN Environment Programme (UNEP), the Agence de coopération culturelle et technique, the Commonwealth Secretariat and the Association des universités partiellement ou entièrement de langue française.

The workshop was conceived as one of the follow-up activities of the Tbilisi Conference and had these long-term objectives: (1) to further environmental education, training and research in the African region at the university (or post-secondary) level through action-oriented programmes and by establishing networks of institutions; and (2) to help develop and provide personnel in the various countries knowledgeable in the principles and practise of environmental management and environmentally sound development.

The immediate objectives were to bring together a group of selected experts and key personnel in the fields of environmental education, training and research from African universities; to review the present situation of these areas in African universities; to identify the best measures for the collection, exchange and dissemination of information about environmental

education, training and research and ways of encouraging and supporting their development in African universities.

The workshop was attended by 161 participants. Ninety-six came from 50 universities, 19 from UN agencies and organizations, 16 from governments and 30 from various bodies and post-secondary educational institutions. University participation included vice-chancellors, deans of faculties, directors of research institutes, senior professors and scientists.

The work was primarily organized by plenary sessions and task forces, the latter bringing forward recommendations on specific themes dealt with in plenary session for consideration, amendment and adoption at the closing meeting. These themes were dealt with and discussed: (1) the conceptual and philosophical basis for environmental education, training and research; (2) problems and prospects in these areas, especially concerning learning about environmental systems, human and other natural resources and human intervention in the environment; and (3) institutional and pedagogical approaches to environmental education, training and research in African universities.

A total of 85 recommendations were adopted by the workshop in Nairobi. They were related to these central topics: teaching and research; institutional frameworks for teaching and research; linkages between teaching and research and policy-making systems; and institutional networks in Africa for environmental education, training and research. They were addressed to these "target sectors": African governments and universities, international agencies and organizations and nongovernmental bodies.

Recommendations directed to African universities referred to: (1) the need for environmental education and training, stressing interdisciplinarity; (2) institutionalizing environmental education and training within and between universities; (3) content and methods of teaching with an emphasis on participation in a problem-solving approach to local environmental problems; (4) potential audiences for university EE programmes from the general public to specialized professional groups; and (5) research with an accent on the real environmental needs of society.

Workshop participants brought papers on the state of environmental education, training and research in their universities and countries. These will be compiled and published. Copies of the report and other publications concerning the African workshop may be obtained from: Secretary General, Association of African Universities, P.O. Box 5744, Accra-North, Ghana ; and EETU, UNEP, P.O. Box 30552, Nairobi, Kenya.

Science Education and the Environment

A three-day conference on the theme "Science Education for Progress – a Regional Perspective" was organized, with Unesco support, in Barbados, 20-22 April 1979. The meeting was attended by a total of about 130 participants from countries in the Caribbean subregion, from North, Central and South America and from a few countries in Europe and Africa. It was cosponsored by the International Council of Associations for Science Education (ICASE), the Caribbean Regional Organization of Associations for Science Education (CROASE) and the National Science Teachers Association (NSTA) of the USA.

The main focus of the conference was on science education for development and on the educational significance of the social implications of science and technology. The conference gave considerable attention to environmental themes. One whole day was devoted to a study in depth of the topic « Energy » with particular reference to the needs and possibilities of countries in the Caribbean.

The conference went on to discuss the teaching of a theme such as "energy" in a context which brings out its social relevance and the importance, for national development, of wise policy- and decision-making. It was agreed that, in the context of social relevance, a more interdisciplinary approach to the curriculum was essential, especially in the fields of natural science and social studies.

One discussion group of the conference was devoted to the topic "Using the Environment to Teach Science". A series of practical activities were reviewed which could be carried out in the school grounds. Each of these was an attempt to contribute to an understanding of one or more fundamental concepts in environmental education.

Integrated science curricula for primary and secondary levels developed in the Caribbean were reviewed during other conference sessions. Some of these courses, such as the Belize project "Environmental Approach to Primary Science", include many environmental themes related especially to local agricultural and industrial development.

A full report of the conference will be published, later in 1979, by the International Council of Associations for Science Education. It will be obtainable from Mr. W. King, School of Education, University of the West Indies, Cave Hill, Barbados.

With the report below, Connect ***continues its series on national EE activities and invites similar reports from other Member countries***

Environmental Education in the United States

The roots of environmental education in the United States grew out of educational movements concerned with appreciation of nature, conservation of natural resources and use of the outdoors for teaching. It received national attention in 1970, when the U.S. proclaimed one week in May as "National Teach-In on the Environment".

In the same year, the U.S. Congress passed the Environmental Education Act and established the Office of Environmental Education within the Department of

Health, Education and Welfare to administer the Act. This legislation helped to provide the leadership and funds for local, state and national initiatives in the field of environmental education. Specifically, the Environmental Education Act has financed over 500 projects since 1971 in the areas of community awareness, instruction and curriculum, personnel training and evaluation and dissemination. The Office of Environmental Education has identified a key governmental individual in each of the fifty states as the contact for environmental education. Periodically they are brought together for exchanging ideas on furthering EE throughout the country.

In addition to the national legislation for environmental education, several states have had similar legislative success in stimulating EE activities at the state level. The California EE Act, for instance, empowers the State Department of Education to encourage the development of educational opportunities specifically related to environmental education. The New Jersey EE Act provides for school district programmes, regional facilities for students and teachers, and curriculum research and development centers. In Florida, the Environmental Education Act was passed to stimulate awareness and understanding of the environment and develop problem-solving skills among students, teachers and administrators in the state. The Wisconsin statutes require that the conservation of natural resources be taught in every elementary and secondary school. In addition, adequate instruction in the conservation of natural resources is required for teacher certification.

Since 1970 there have been six national conferences, each with a different EE focus. The sixth and most recent was a national leadership conference on environmental education, which was a follow-up to the Tbilisi Conference, to review recommendations from all of the previous national and international meetings. The outcome was the drafting of 16 definitive recommendations relating to a national strategy for environmental education with each recommendation targeted for implementation along an established timeline. (See *Connect*, Vol. III, No. 3, September 1978.)

In addition, three major professional organizations have sponsored annual conferences and provided an arena for the exchange of information. They are the Conservation Education Association, the National Association for Environmental Education and the American Society for Environmental Education.

In order to obtain better communication and coordination among all federal agencies with an EE interest, the Federal Interagency Committee on Education formed a subcommittee on environmental education. This subcommittee has served to bring agency representatives together several times a year to exchange information on their EE approaches and activities. It has also played an important role in helping to prepare the U.S. Delegation to the Intergovernmental EE Conference at Tbilisi.

A consortium of nongovernmental organizations has also been formed to link groups involved in environmental education. It is called the Alliance for Environmental Education, has a combined membership of 30 organizations and 12,000 individuals, and meets regularly to discuss environmental education issues of mutual concern and to take joint action when appropriate. Regional coalitions have also been formed to exchange ideas of common interest. These include the Western Regional EE Council, the Great Lakes EE Council, the Southern Regional Council and the Northeast EE Development.

A *Journal of Environmental Education*, dedicated to the publication of research activities in environmental education, has been created. In addition, there has been established a computerized EE diffusion system, Educational Resources Information Center (ERIC) (see p. 8), in which all relevant EE activities are available on microfilm at centers located throughout the country or by mail for a reasonable price.

For additional information on EE activities in the U.S., write: International Organization Division, Department of State, Washington, D.C. 20520, U.S.

Ekofilm Festival

The sixth international Ekofilm Festival, whose theme was "Technology in the Service of the Human Environment", was held in Ostrava, Czechoslovak Socialist Republic, 21-25 May 1979. One hundred and fourteen films had been submitted to the environmental film festival's organizers from which 100 films representing 19 countries were selected for the competition. The principal prizes were rewarded, in this order, to documentary films of the following countries: Federal Republic of Germany, Czechoslovak Socialist Republic, USSR, Bulgaria, Poland, Netherlands, Finland, UK and USA.

A regular feature of the Ekofilm Festival has been its panel discussions and seminars accompanying the showing of the documentary films. This year's panels were devoted to the subject and film treatment of: (1) protection of the atmosphere from industrial pollution; (2) noise in the human environment; (3) current problems in the preservation of water quality; and (4) the impact of large-scale agriculture on the environment.

The festival's seminar was of special interest since it concerned the role of films and television in environmental education of both specialists and the general public. Over 50 educators, filmmakers, TV producers, journalists and other media specialists participated. They concentrated on constructive criticism of the environmental films shown from the point of view of their educational effectiveness vis-à-vis youth and adult audiences inside and outside the formal school system. Emphasis was placed on a clear statement of the problem coupled with its solution reached through an interdisciplinary as well as a problem-solving approach.

In addition there was a professional discussion at the seminar on the techniques of documentary filmmaking – appropriate lengths for different age levels, proper mix of entertainement and instruction, audio and visual, etc. – with the goal of improving pedagogical and educational content without loss of general appeal. The encouragement and improvement of TV programmes on the environment, which all participants stressed as being of major importance in public education, was similarly discussed in terms of form, content and techniques. Lastly ways and means for improving the international exchange of EE films and TV programmes were also discussed and explored.

For information about procurement of movies shown at the Ekofilm Festival, write: RAPID, Czechoslovak Publicity Agency, Tyršova 7, 701 43 Ostrava 1, Czechoslovakia.

EE Institutions and Communications

Directories on environmental education institutions and programmes are being prepared as part of the International EE Programme which is devoted to promotion of the exchange of information and experience in this field. Please send details and documentation to *Connect*, address on back page. The following items have lately been received.

Fondation Universitaire Luxembourgeoise, rue des Déportés 140, 6700 Arlon, **Belgium.** This institution's stated aim is "to stimulate and coordinate applied scientific research and some forms of postgraduate studies, namely in the field of environmental studies and psychopedagogy, in cooperation with other Belgian universities and equivalent institutions." The Environment Department of its Interuniversity Centre for Environmental Studies offers a research programme based on problems of the quality of life, economic development and promotion of the rural environment with an emphasis on inter- and multidisciplinarity. Studies can lead to a doctorate, a master's degree or a certificate in environmental studies.

Université Catholique de Louvain, **Belgium.** Since 1971, this university has had courses, seminars and field work on the environment, particularly pollution, for both general and specialized educational purposes. The instruction is highly inter – and multidisciplinary. A 26-page descriptive brochure in French is available from the university's Service d'études, Krakenstraat 3, 3000 Louvain, Belgium.

Environmental Studies Association of Victoria, 324 William Street, Melbourne 3000, **Australia.** This association is nonprofit and nongovernmental and has been involved in EE since 1972. It offers a variety of study courses ranging from one to three days, which are generally open to all. However there is a special emphasis on teachers and their in-service education needs. Further information as well as the newsletter *ESAV News* are available from the association at the address above.

Partners for Livable Space, 2120 P Street NW, Washington, D.C. 20037, **U.S.A.** Nonprofit and nongovernmental, this coalition of organizations and individuals is dedicated to improving the quality of life of its nation's communities. One major area of action is promotion of public awareness by means of publications, mass media, a syndicated newspaper column, a newsletter for members and a news magazine titled "Livability".

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From Dr. Kiew Bong Heang, Malayan Nature Society, P.O. Box 750, Kuala Lumpur, **Malaysia:** "The Malayan Nature Society, a nonprofit, nongovernmental organization formed in 1940, is deeply interested in promoting environmental education in Malaysia and its neighboring countries, in addition to nature studies and conservation education. The Council of the Society has set up an Education Committee for this purpose. The programme is planned for a three-year period (1979-1982). Phase I will involve a workshop of teachers and scientists to identify EE problem areas for Malaysia. Phase 2 will involve soliciting of relevant scientific personnel to develop needed resource materials which will be tested in the state of Selangor. Phase 3 will involve the production and distribution of the tested materials. If funds permit, the materials will be sent on request to other ASEAN countries. In planning this ambitious programme the Malayan Nature Society takes the view that if it is willing to do the work, there will be other organisations which will come forward with funds to support it."

From Mr. J.H.P. Sankey, Liaison Officer, Field Studies Council (International), Preston Montford, Montford Bridge, Shrewsbury SY4 1DX, **U.K.**: "The Field Studies Council runs short residential courses in nine centres in England and Wales on such environmental subjects as conservation, plant and animal ecology, birds, soils geography, geology and many others for groups from schools and colleges as well as for amateurs of all ages. Special courses are organized on request for groups from the Continent and visits can be arranged to places of interest near a centre. Special fee arrangements are made for groups. The Field Studies Council is a private, nonprofit organization involved with environmental education since 1946."

A note of **clarification** has been received from Dr. Nilay Chaudhuri, Chairman, Central Board for the Prevention and Control of Water Pollution, New Delhi, **India,** regarding an item appearing in *Connect*, Vol. III, No. 4. The item quoted *Development Forum*, which is published by the UN's Centre for Economic and Social Information, to the effect that "a government committee reported that the water in New Delhi is so badly polluted it should not even be used for watering gardens." Dr. Chaudhuri kindly requests that the item be clarified. "The fact is," he writes, "the water being supplied to New Delhi by the Municipal Corporation of Delhi is wholesome and safe, because the water is obtained from the River Jamuna upstream of the Wazirabad Barrage and is adequately treated before it is supplied to the public. It is the raw water of the River Jamuna downstream of the Barrage which is very much polluted and the quality of this raw water at times does not permit its use even for gardening."

EE Publications and News

Tropical Forest Ecosystems: a State-of-Knowledge Report Prepared by Unesco/UNEP/FAO. Paris, Unesco, 1978. 684. Hard cover, 180 F; soft cover, 144 F. (Natural Resources Research, XIV).

This report aims at providing a clear summary of knowledge of the structure, functioning and evolution of tropical forest ecosystems and of the human populations that live within and around these ecosystems. It also describes some of the main patterns of use of these ecosystems. In presenting this information, the report attempts to identify gaps in knowledge, to present recommendations for future research, to indicate appropriate methodologies for problem-oriented studies on tropical forest ecosystems, to describe examples of land and resources management and examine some of the reasons for success or failure in specific concrete situations, and thus to highlight needs for future orientation in land-use and management strategies.

The report comprises three principal parts. Part I chiefly contains the research results of biologists and other natural scientists. Fourteen chapters deal with the description, functioning and evolution of tropical forest ecosystems, covering both disturbed and undisturbed situations. It includes information on composition, structure, biomass, primary and secondary productivity, water budgets, nutrients cycling, energy flow, stability, species interactions, succession, growth, regeneration, pests and diseases.

Part II is of particular interest to demographers, social anthropologists, ethnologists and other scientists, as well as resource managers and land planners. It is mainly concerned with the biological behaviour and socio-cultural aspects of the human populations living in and around tropical forest ecosystems and with their patterns of use and management.

Part III of the report contains eight regional case studies, which describe specific tropical forest ecosystems from various viewpoints (either basic research or utilization and management) to illustrate the kind and orientation of research.

—From *Nature and Resources*, Vol. XIV, No. 3, July-September 1978.

Man and His Environment: An overview of Unesco's involvement, 1979, 65 pp.

The content of this brochure, as indicated in the Preface, "has been extracted from *Thinking Ahead*, a book which explains the Medium-Term Plan of Unesco for the period 1977-82. Each of the brochure's seven sections is devoted to one of the objectives of the Medium-Term Plan concerning Man and his Environment" – namely, (1) Knowledge of the earth's crust and of its resources; (2) The biosphere: man's influence on his environment; (3) Sharing water resources; (4) Man and the sea; (5) Man and the city; (6) Safeguarding the heritage of mankind and preserving the natural environment; and (7) Knowing how to live: education on the environment. "The texts give a comprehensive account not only of the main guidelines for the Organization's activities in the coming years for each objective, but also of the reasons which dictated their choice and of the evolution of relevant action. No attempt is made here to give detailed descriptions of current or planned projects, nor of the ways and means by which these projects are implemented." For a more detailed description of Unesco's involvement in environmental education (Section 7) through the Unesco-UNEP International EE Programme, see *Connect*, Vol. III, No 4, December 1978.

For information about the above items, write: Unesco Press, 7, place de Fontenoy, 75700 Paris, France.

"*People, Water and Sanitation*" is the title and subject matter of the 191-page Spring 1979 issue of Unicef's *Assignment Children*, a journal concerned with children, women and youth in development. Part I concerns lessons learned from past experiences in water supply and sanitation for all. Part II deals with urban slums, "the sector left out of planning". These dossiers are followed by specific case studies: "Methodology – Paraguay", "The Village Level – Colombia", "The National Level – Bangladesh", "Training – Malawi", "Maintenace – Tamil Nadu, India", "Shared Technology – Mali" and "Women – Kenya". Lastly there is a report on a **WHO** meeting concerning "Appropriate Technology for Improvement of Environmental Health at the Village Level", held in New Delhi, India, 16-20 October 1978. For further information, write: Unicef – *Assignment Children*, Villa Le Bocage, Palais des Nations, Geneva 10, Switzerland.

The State of the Environment in OECD Countries is a 15-page reprint summarizing a report published by the Organisation for Economic Cooperation and Development. It covers a 10-year period (1969-1979) and is available in English or French from the OECD *Observer*, 2, rue André-Pascal, 75775 Paris, France.

At the close of a meeting of the Ministers for Environment of OECD countries, 7-8 May 1979, a declaration was adopted stating that Member governments "will support the promotion of environmental objectives and awareness in the field of education" and "they will encourage public participation, where possible, in the preparation of decisions with significant environmental consequences, inter alia, by providing, as appropriate, information on the risks, costs and benefits associated with the decisions."

Forum, No. 4/78, published by the Council of Europe in English, French, German and Italian, includes a 12-page section on "Environmental Education" for both rural and urban areas. Address: 67006 Strasbourg Cedex, France. A memorandum in English and French on the second meeting of the Committee of Experts on Environmental Education and Training, 26-27 September 1978, is also available.

Parks and People is a 28-page report on a European Conference for Naturparke/Parcs Naturels/National Parks (UK)/and Equivalent Reserves, 25-29 September 1978. An entire day was devoted to "Interpretation/animation/and Environmental Education" with special reference to the German experience and on the day following to the French écomusées. Write: Principal, Losehill Hall, Castleton, Derbyshire S30 2WB, UK.

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Urban Management Processes is a 154-page report, complete with background papers, on the proceedings of a seminar of the same name which was sponsored by the Australian National Commission for Unesco and held in Adelaide, Australia, 22-25 August 1977. It may be procured by writing the Commission, care of Department of Education, Woden ACT, Australia 2606.

Development of Environmental Education in Australia: Key Issues is a 104-page publication with sections on: (1) the definition and aims of environmental education; (2) a strategy for the development of EE in Australian schools; (3) the role of supporting organizations in this development, such as government authorities, teacher associations, tertiary education in-

stitutions and community organizations; and (4) a survey of EE needs in Australia. *Report of the Curriculum Development Centre Study Group on Environmental Education*, 48 pp., contains the views, recommendations and suggestions of members of the EE Study Group on current needs and future actions. For further information on both publications, write: Ms. Annette Greenall, EE Coordinator, Curriculum Development Centre, P.O. Box 632, Manuka ACT, Australia 2603.

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JEP 4: Teacher's Manual is a spiral-bound trial edition in English only of a text designed for the joint purpose of teaching English and the principles of ecology to young people. JEP stands for Junior English Programme, which was created by the Centro de Linguistica Aplicada of the Instituto de Idiomas Yazigi, Ave. 9 de Julho, 3.166 São Paulo, Brazil, to whom requests for the comic-book style teacher's manual should be addressed.

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De Toute Urgence is a magazine devoted to the rational use of the environment and its resources, published by the Conseil québécois de l'environment with the support of IUCN. Vol. 10, No. 1, March 1979, includes articles on the accident at the Three Mile Island nuclear installation near Harrisburg, Pa., U.S., as well as other articles and book reviews of environmental education interest. For further information, write to the Conseil québécois de l'environnement, C.P. 39, Sillery, Québec, G1T 2P7, Canada.

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Three publications have been received from Universidad EAFIT (Escuela de Administración y Finanzas y Tecnologías), Medellín, Colombia: (1) *Documento de Estudio sobre Educación Ambiental - 4 Modelos*; (2) *Temas Administrativos 30* (largely on environmental management); and (3) *Ensayo sobre Eco-Administración*. For information, write Universidad EAFIT at the address given.

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The Educational System Applied by the Administration of the Krkonoše National Park is a small pamphlet describing the many EE activities of the well-known national park of Czechoslovakia involving schools, nature groups, lectures and meetings, a museum, library and documentation center.

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A 162 page *Report on Environmental Education in Denmark* in the light of the Tbilisi Intergovernmental EE Conference, which is also reported on in length, is now available in Danish from: Ministry of National Education, Frederiksholms Kanal 21-25, 1220 Copenhagen, Denmark.

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Nouvelles de l'écodéveloppement is a quarterly in French only which has been appearing since February 1977. It is edited by the Centre international de recherche sur l'environnement et le développement of the Ecole de hautes études en sciences sociales and published by the Maison des sciences de l'homme with the financial support of UNEP. As the title suggests, news and articles concerning ecodevelopment, or ecologically sound development, constitute the focus of the magazine. It is distributed freely to institutions and individuals such as libraries, documentation centers, researchers and the like. For information, write: *Nouvelles de l'écodéveloppement*, 54, boulevard Raspail, Bureau 309, 75270 Paris Cedex 06, France.

Campagne d'information et d'action éducative sur l'environnement: Région Provence-Alpes-Côte d'Azur (1977-1978) is an interesting folio-size 74-page brochure prepared by the Collège méditerranéen de réflexion et d'échanges sur l'environnement, 2 rue Beauvau, 13001 Marseille, France. Chapters deal wih "Environment and Educational Activities", "Environment and the General Public" and "Environment and the Commune".

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Zeitschrift für Umweltpolitik (Journal for Environmental Policy) is a new quarterly "intended to work as a creative force in environmental policy by virture of both its problem-oriented approach and its high theoretical standards." Articles are primarily in German with up to a third in English. All articles have a German and an English résumé. For information, write the publisher: Deutscher Fachverlag GmbH, Schumannstrasse 27, 6000 Frankfurt/Main, Federal Republic of Germany.

Leben und Umwelt (Life and Environment) is normally a bimonthly publication (monthly on occasion) devoted to biology and the protection of the environment, both natural and built. For further information, write: Prof. Dr. H. Bruns, Editor, Weiherallee 29, D 6229 Schlangenbad 5, Federal Republic of Germany.

A series of publications in German has been received from the University of Essen. Four have been issued since September 1977. They deal with: (1) the university's EE materials centre; (2) national and international EE conferences from Stockholm to Tbilisi and afterward, interdisciplinarity, etc.; (3) EE trends in the Federal Republic of Germany and the promotion of EE in schools of the EEC countries; and (4) the specific contribution of the earth sciences to an interdisciplinary EE university curriculum. For information, write: Prof. Dr. Peter Schneider, Zentralstelle für Umwelterziehung, Universität Essen - GHS, FB 9, Universitätsstrasse 5, 4300 Essen 1, Federal Republic of Germany.

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The Dakar-based Environment Training Programme known as ENDA is publishing an interesting series of documents on appropriate technologies for the developing world - windmills, tractors, village mechanization, natural fertilizers, etc. They are appearing as supplements of the organization's quarterly magazine *African Environment*. For information or literature, write: ENDA, B.P. 3370, Dakar, Senegal.

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La Escuela y Su Medio (The School and its Environment) is a 54-page booklet on school experiences in the Spanish province of Alicante, 1976-1978, which involved use of the local environment for pedagogical purposes. It has been printed by Sucesor de Such, Serra y Compañia, Avenida de Orihuela, 51, Alicante, Spain.

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REED (Review of Environmental Education Developments) is a newsletter in its seventh year, particularly useful for its information on environmental education in Great Britain. It is produced and

published by the Directorate of the Council for Environmental Education at the School of Education University of Reading, London Road, Reading RG1 5AQ, U.K.

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ERIC (Educational Resources Information Center) is a national information system, a source for obtaining documents on education (environmental and other) and a network of decentralized information centers. It collects, screens, organizes and disseminates educational reports, furnishes copies of educational documents at nominal cost, prepares interpretative summaries, research reviews and bibliographies on critical topics in education and services decentralized information centers throughout the U.S. ERIC "clearinghouses" monitor, acquire, evaluate, abstract, index and list current information relevant to their particular educational area. The "clearinghouse" for science, mathematics and environmental education (ERIC/SMEAC) may be addressed at The Ohio State University, 1200 Chambers Road, 3rd Floor, Columbus, Ohio 43212, U.S. It distributes its own EE newsletter.

Environmental Awareness Through the Arts is a spiral-bound, 198-page teacher's guide to the use of art for awakening environmental awareness in students. It has a carefully planned core of curriculum activities with some illustrative materials. For information, write: Ms. Myrtle Kerr, Supervisor, Art/Humanities, Department of Education, P.O. Box 44064, Baton Rouge, Louisiana, U.S.

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A collection of colorful wall posters and other materials has been received from the Chief Conservator of Forests, Forest Department, P.O. Box 228, Ndola, Zambia, together with this communication: "We in the Forest Department of Zambia spend a good deal of time producing materials, posters, wall teaching features and pamphlets on the need for forest conservation in particular and environmental conservation in general. Naturally much of the materi' is Zambia-oriented, but much is applicable to most developing countries in tropical and semi-tropical conditions and migh: also be of value to others."

MAB

MAB in Thailand

A National Seminar on Planning and Management of Environmental Research Projects was held in Bangkok, Thailand, from 11 to 22 December 1978, with the support of Unesco. The seminar was convened by the Thai National Committee for the Man and the Biosphere (MAB) Programme, assisted by Unesco consultant Dr. R.A. Hynes of Griffith University, Australia. The overall aim of the seminar was to help increase the effectiveness of research in contributing to pragmatic solutions to environmental problems in Thailand. The seminar involved lectures and practical exercises. It concentrated on such major issues as identification of field projects through systematic analysis of problems, techniques for selection of projects, the design of research projects, guidelines for writing of project proposals and techniques of project control and management. A 390-page book of seminar materials was compiled for use by seminar participants. The seminar was organized within the framework of MAB Project A on tropical forests and the UNEP-Unesco Programme for the development of ecological pilot projects in tropical forest areas.

RECYCLE PAPER

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